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Method of separating and selectively removing hydrogen contaminant from hydrogen-containing process streams and compositions useful therefor

Description of Technology: The invention generally relates to separating and removing hydrogen contaminant from hydrogen-containing process streams and more particularly to selectively removing hydrogen from such process streams using Cd containing zeolite, silica, alumina, carbon and clay compositions.

Patent Listing:

1. **US Patent No.** 6,306,198**,** Issued on October 23, 2001, "Method of separating and selectively removing hydrogen contaminant from hydrogen-containing process streams and compositions useful therefor"

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6,306,198.PN.&OS=PN/6,306,198&RS=PN/6,306,198

Market Potential: Zeolites are widely used as sorbents in many applications that use the zeolite's ability to entrap liquids and gases. One potential application is the development of zeolite storage materials for cases. In addition, zeolites offer the possibility of selective separation of gases from mixed streams.
Zeolites are crystalline aluminosilicates with framework structures. The framework structure contains channels and cages of molecular dimensions. Cations and small molecules can reside on or within the pores, cages or channels. Zeolite rho is a typical example, with a 3-dimensional network of alpha-cages (cubo-octahedra) which are connected to each other by octahedral prisms, or in other words, a body centered cubic structure of alpha cages. Selective blocking of pores in zeolites can be achieved by ion-exchanging the zeolites with different sized cations, thereby altering the sorption properties of the zeolite. There have been several attempts to encapsulate hydrogen gas in various metal-exchanged zeolites

What are needed are additional compositions capable of encapsulating hydrogen in larger amounts and at lower pressure than the prior art. In addition, a method of separating and selectively removing hydrogen from hydrogen-containing process streams using said compositions is also needed. Other objects and advantages of the present invention will become apparent to those skilled in the art upon reference to the detailed description of the invention which hereinafter follows.

Benefits:

- Encapsulates hydrogen in larger amounts and at lower pressure
- Separate and selectively remove hydrogen from hydrogen-containing processes streams

Applications:

- Removing hydrogen from hydrogen streams

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